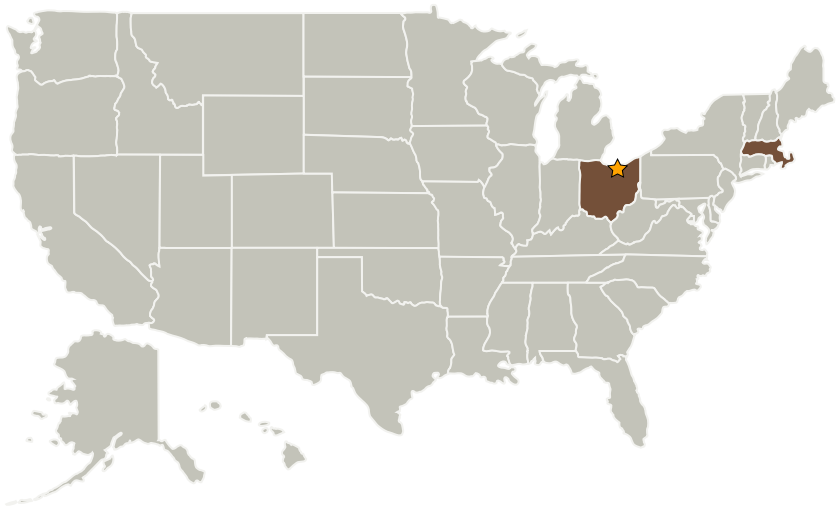
Novel Deployable High Frequency Antennas Using Composite Electro-Textiles, Phase I

Completed Technology Project (2006 - 2006)

Project Introduction

This proposed Phase I program will address NASA's need for large diameter high radio frequency (Ka band 27- 40 GHz) apertures that provide greater gain and resolution for communications and remote sensing systems. This will be accomplished by developing a new high accuracy electro-textile antenna surface as well as investigating a novel involute wrapped rib deployable support structure for large aperture antennas that is light weight and deploys out of a very small volume. The combination of light weight composite components will provide a new set of solutions for this growing need, both at NASA and the Air Force. Successful completion of the phase I program will demonstrate feasibility of the innovative electro-textile mesh and begin to quantify the potential benefits of Infoscitex's novel involute rib backing structure for deployable antennae. The phase I program will show that the new electro-textile mesh composite mesh has the necessary reflectivity and low PIM performance required of Ka Band antennae. A Phase II program would further refine the new electro-textile composite and permit the fabrication of an antenna demonstration article for deployment and RF testing with our aerospace industry partners.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Glenn Research Center (GRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Glenn Research Center(GRC)	Lead Organization	NASA Center	Cleveland, Ohio
Infoscitex Corporation	Supporting Organization	Industry	Waltham, Massachusetts

Primary U.S. Work Locations	
Massachusetts	Ohio

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX05 Communications, Navigation, and Orbital Debris Tracking and Characterization Systems
  - └ TX05.2 Radio Frequency
    - └ TX05.2.6 Innovative Antennas